

REMARKS/ARGUMENTS

The present application includes pending claims 66, 67, 88-90. The remaining claims have been cancelled without prejudice.

Claim 66 and 67 stand rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent Nos. 6,584,907 ("Boucher"). These rejections are respectfully traversed.

Claims 66 and 67 have been amended to more clearly differentiate the claimed structure from Boucher. In this regard, claim 66 now specifies the sequence in which a bus controller transmits the digital arming and firing signals and modifies the analog condition of the network. In particular, claim 66 now specifies that the controller is "structured to first transmit a digital arming command onto the network, the digital arming command using one or more of the unique identifiers, thereafter alter an analog condition of the network to a firing condition, and thereafter transmit a digital firing command onto the network, the digital firing command using one or more of the unique identifiers." Boucher fails to disclose or suggest a bus controller that has this claimed structure.¹

Claims 66 and 67 also require that the logic device in each of the pyrotechnic devices is "structured to store activation energy in the associated pyrotechnic device if the digital arming command includes the unique identifier of the logic device." Claims 33 and 34 further specify that logic device in each of the pyrotechnic devices is structured to "release the stored activation energy into the initiator of its associated

¹ The case law cited in the Advisory Action is inapplicable as the pending claims clearly recite structure that is not disclosed or suggested in Boucher.

pyrotechnic device only if both (1) the analog condition of the network has been modified to the firing condition and (2) the digital firing command includes the unique identifier of the logic device." Thus, in the claimed device a given pyrotechnic device or combination of pyrotechnic devices can be armed by digital arming signals. The digital arming command causes activation energy to be stored in the particular pyrotechnic devices whose unique identifiers are included in the digital arming command. This allows selected ones of the pyrotechnic devices to be armed and placed in a condition for firing. However, before any of these devices can be fired/discharged, the bus controller must first modify an analog network condition and thereafter transmit a firing command that includes the unique identifier for the logic device of that specific pyrotechnic device. As is discussed in the specification, this claimed feature enhances safety by reducing the possibility of erroneously firing a pyrotechnic device. (See, e.g., page 18, line 16 to page 19, line 11). This claimed combination is not disclosed nor suggested in the cited references.

Like the present invention, Boucher apparently recognizes the need to reduce the likelihood that pyrotechnic devices are mistakenly fired. However, Boucher takes a different approach to addressing this issue. In particular, Boucher describes "the use of [a] multi-voltage level communication system in which communication signals are carried at a first voltage and arming signals are provided at a second, higher voltage." (Col. 5, line 66 to col. 6, line 2). Hence, Boucher requires to presence of a higher voltage to charge/arm the pyrotechnic devices. According to Boucher,

Another feature of the present invention is that firing control system 12 and initiators 16, 18, etc., may be configured so that different types of signals are conveyed at different

power levels, e.g., different voltage levels along bus 14. For example, communication signals, e.g., signals from firing control system 12 intended only as a query to the initiators for readiness, response signals from the initiators to firing control system 12 indicating their readiness to be armed, and fire initiation signals from firing control system 12 to the initiators may occur at a low power level, preferably lower than the no-fire threshold of the initiators. In this way, test and programming signals that are not intended themselves to arm and/or initiate the initiators are carried out at a level that is insufficient to arm and/or initiate the initiators even if the communication signals are somehow misinterpreted. Such communication signals may be carried on bus 14 at, e.g., about 7 volts. When the system is ready for arming, the energy for arming the initiators may be provided at a higher level than the communication signal level, e.g., at 28 volts.

(Boucher at col. 10, line 58 to col. 11, line 10). As this passage makes clear, Boucher does not teach a system in which a pyrotechnic device is first armed (i.e., stores activation energy) in response to a digital arming signal and is thereafter only fired (i.e., "release the stored activation energy into the initiator of its associated pyrotechnic device") "if both (1) the analog condition of the network has been modified to the firing condition and (2) the digital firing command includes the unique identifier of the logic device." Rather, Boucher specifically teaches the use of a higher voltage to arm the initiators. By contrast, the claims require the initiator to be "structured to store activation energy in the associated pyrotechnic device if the digital arming command includes the unique identifier of the logic device." In view of the above, claims 66 and 67 are believed to be patentable over Boucher.

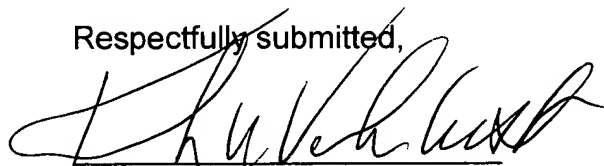
New claims 88 and 89 are believed to be patentable for the reasons given above. Further, new claims 88 and 89 include elements that further differentiate from the Boucher. In particular, in claim 88 and 89 the analog network condition is specified as

being "a frequency of the network" and "a modulation depth of the network," respectively. Hence, claims 88 and 89 are believed to be in condition for allowance.

New claim 90 requires that "the logic device in each of the pyrotechnic devices being structured to . . . discharge the stored activation energy if a digital disarming command includes the unique identifier of the logic device", which is neither disclosed nor suggested in the cited references. Hence, claim 90 is believed to be in condition for allowance.

The Applicants respectfully request reconsideration of the claims. No fee is believed to be due in connection with this submission. The Commissioner is authorized to charge any fees due in connection with this submission to Deposit Account No. 13-0017.

Respectfully submitted,



Kirk A. Vander Leest
Reg. No. 34,036
Attorney for Applicants

McAndrews, Held & Malloy, Ltd.
500 West Madison Street, 34th Floor
Chicago, Illinois 60661
Telephone: (312) 775-8000
Facsimile: (312) 775-8100